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NAVAL WAR COLLEGE
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**Delivering Forward Surgical Care in the Rapid Force Maneuver Environment:
A Challenge to Service Medical Department Innovation and Adaptability**

By
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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Joint Military Operations Department.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College, the Navy Bureau of Medicine and Surgery, the Office of the Surgeon General of the Army, the Office of the Surgeon General of the Air Force, the United States Marine Corps Health Programs Office or the Department of the Navy.

Signature: _____

3 February 2003

Advisor: Prof. Paul St. Laurent

TABLE OF CONTENTS

	PAGE
INTRODUCTION_____	1
ANALYSIS_____	2
Army_____	4
Air Force_____	5
Navy/Marine Corps_____	6
Joint Collaboration_____	8
Counterarguments_____	10
RECOMMENDATIONS_____	13
Joint Integration_____	13
Modernization_____	15
Logistics Considerations_____	16
Awareness and Improvement_____	16
Training and Effectiveness_____	17
CONCLUSION_____	17
NOTES_____	iii
BIBLIOGRAPHY_____	iv
ACRONYMS_____	v

Delivering Forward Surgical Care in the Rapid Force Maneuver Environment: A Challenge to Service Medical Department Innovation and Adaptability

We must rapidly deliver combat forces to the joint force commander and link operating forces with viable sustainment systems. We will provide a fully enabled mobility system to optimize rapid projection, delivery, and handoff of joint forces and sustainment assets worldwide; distribute the required forces and sustainment at the place and time required; support rapid force maneuver within the joint operations area; and return those forces to home station for regeneration and reconstitution.¹

Introduction

A patient's chances for survival are directly proportional to the time between the moment of critical injury and the point at which that patient receives skilled surgical care. Absent this care in the tactical environment, a higher percentage of combat troops will die or will suffer seriously complicated disabilities. Rendering surgical care in rapid force maneuver (RFM) operations is a significant challenge to all Services, particularly in those forward areas where medical evacuation (MEDEVAC) is difficult and potentially delayed.

There are many components to the Department of Defense (DoD) health service support (HSS) infrastructure that deliver state-of-the-art care to today's armed forces. This paper addresses the accessibility of combat health support (CHS) forward-deployed surgical care in a RFM joint operational environment.

Army, Navy, Air Force, and Marine Corps have very specialized deployable surgical systems designed to support a variety of military operations. Each Service strives to meet today's RFM CHS requirements, particularly with regard to forward surgical care. When viewed from the Combatant Commander's (COCOM) perspective, rapid maneuver forces can be at significant risk for limited access to surgical care if this requirement is not addressed comprehensively during deliberate or crisis-action planning.

In the setting of major weapons technologies, the major cause of mortality following wounding is hemorrhage. The more quickly a casualty is resuscitated and stabilized, the lower the mortality and disability, and the fewer the complications. Stabilization of the wounded or severely injured is achieved by prompt, vigorous resuscitation near where wounding or injury occurs, followed by rapid medical evacuation and initial wound surgery as far forward as the tactical situation permits.²

Developing better surgical capabilities for complex operational missions is a continuous effort. The challenge to create lighter, more mobile surgical capability is compounded by broad-spectrum and competing demands on constrained resources, and legitimate Service priorities to modernize other CHS assets such as modular field hospitals and medical/surgical care afloat. Focusing on joint operability in mobile surgical care can minimize fragmentation and redundancy, decrease Service costs, and ultimately result in more efficient support to rapid maneuver forces. This can be accomplished by developing mobile surgical assets that can interchangeably support multiple tactical fronts and by increasing the level and frequency of combined Service medical integration in joint military evolutions.

Analysis

Until very recently force medical planners tended to view the forward surgical requirement from a cold war era or conventional warfare perspective. Medical doctrine and resource allocation did not support evolving real-world requirements. This had much to do with individual Service interpretation of the two major theater war (MTW) support requirements contained in previous editions of the *Defense Planning Guidance* (DPG). Recent combat between U.S. and al-Qaeda/Taliban forces in Afghanistan demonstrated the increased requirement for lighter, more flexible and integrated surgical assets capable of moving efficiently with highly mobile forces.

Fighting future engagements on a nonlinear, expanded battlefield demands changes in the delivery of CHS. Changes in CHS doctrine must address the requirements for force projection, as well as the future battlefield characteristics of dispersion, lightning-quick military operations, increased mobility, rapid task organization, and lengthened lines of communications.³

Enhancing mobility and integration in forward surgical care is a significant and costly modernization challenge. Each Service has made considerable progress in developing smaller, lighter surgical capability flexible enough to operate in a variety of maritime, amphibious, and land-based environments. Forward surgical care is not complete surgery, but is the initial effort necessary to prevent death, minimize disability, and enable the patient to be transported to higher levels of care. This may be to a field hospital in the communications zone (CZ), a nearby casualty receiving and treatment ship (CRTS), or a regional trauma center completely outside the area of operation (AO).⁴

Many planners tend to minimize the complexity involved in delivering forward surgical care, the personnel requirement, or the inherent logistical challenges involved. Conversely, others believe that effective resuscitative surgery cannot occur outside the modern surgical suite of a large field hospital. Reality lies between both ends of this attitudinal spectrum.

Technology and joint doctrine seem likely to change the time-space dimension in warfare. Combat will occur at a faster tempo than previously. Future high-technology wars likely will be short, violent affairs, rather than prolonged conflicts. Likewise, conflict will occur over greater distances than now, largely because of the growing importance of airpower and deep strikes. Ground operations will also be dispersed. The future will likely witness the transition from linear operations based on firepower attrition to nonlinear operations based on maneuver and fracturing an enemy's cohesion. This new approach to war will require not only a different mentality but also new force structures and doctrine.⁵

Space, time, troop dispersion, ground and air transportation assets, the location of medical facilities, and the dynamic tactical situation all influence how readily forces can access surgical care. Operational experience and revolutionary technology provides the means for advanced resuscitative surgical capability in a smaller, lighter venue, both ashore and afloat. While it is certainly optimal to have access to a CRTS---large-deck amphibious warships, aircraft carriers, and hospital ships---or a large field hospital, mobility requirements or casualty evacuation limitations may prevent immediate access to this level of surgical care in RFM. Developing tiered surgical integration is the proven solution to providing comprehensive care in the joint operational environment. An example of this tiered integration might be a wounded Marine receiving initial surgical care by an Air Force mobile field surgical team, then transported by Army MEDEVAC helicopter to a Navy expeditionary medical facility or larger fleet hospital for more definitive surgical care. That same Marine might then be transferred by an Air Force critical care team 24 to 48 hours later to an Army regional trauma center hundreds or thousands of miles away.

Planners must have a clear understanding of each Service's current CHS capabilities to effectively accomplish tiered surgical integration:

Army

Army provides field surgical care through general hospitals, field hospitals, combat support hospitals (CSH), area support medical battalions, and forward surgical teams (FST). The 20-person FST is the Army's premier mobile surgical capability and is designed to replace the mobile army surgical hospital (MASH). It is 100-percent mobile, requires a one-hour set up time, has two operating room (OR) tables with a surgical capacity of 24 OR table-hours-per-day, and provides surgery for up to 30 critically wounded or injured patients

over 72 hours without resupply. It has post-operative nursing care, a blood holding capability, independent generator power, and is rapidly deployable in a C-130 aircraft. The FST facility is contained within two general-purpose (GP) tents with combined square footage of 1,700 feet. It is organized into four functional areas: triage-trauma management, surgery, recovery, and administration/ operations.⁶

The mission of the FST is to provide rapidly deployable immediate surgery capability, enabling patients to withstand further evacuation. It provides surgical support forward in division, separate brigade, and armored cavalry regiment operational areas. The requirement to project surgery forward increases as a result of the extended battlefield. This small, lightweight surgical team is designed to complement and augment emergency treatment capabilities for the brigade-sized task force.⁷

Air Force

The Air Force Expeditionary Medical System (EMEDS), through their Small Portable Expeditionary Aeromedical Rapid Response (SPEARRE) teams, "backpack surgery" capable Mobile Field Surgical Teams (MFST), and their modified air-transportable hospital (ATH) is arguably the most forward-leaning and flexible CHS capability in the military today. The SPEARR team requires one pallet and supports the EMEDS, but also has stand-alone capability.

One component of the SPEARR is the MFST. The MFST is a five-person surgical team that literally carries all their gear in backpacks and is specifically designed to support rapid response missions with joint and coalition forces. The absence of a base operating support (BOS) package enables the MFST to reduce its weight, cube, and personnel requirement for greater mobility. The trade-off is less sustainment capability and a heavy reliance on robust patient evacuation assets.

EMEDS is now contained in 20 pallets, vice the 25-bed ATH of prior years that required 60 pallets to provide the same capability. This new modularity has enabled Air Force, as demonstrated recently in OEF, to support field troops in close proximity to the fighting force and is perhaps the most closely aligned surgical capability to support RFM warfare.⁸

Navy/Marine Corps

Forward surgical care afloat is provided by Navy CRTS. These are aircraft carriers (CV/CVN), large-deck amphibious ships (LHA/LHD), and hospital ships (T-AH). Surgical capability ashore is imbedded in the Marine Expeditionary Force (MEF) Force Service Support Group's (FSSG) Medical Battalion and supports the Marine Air-Ground Task Force (MAGTF). The medical battalion contains surgical companies, shock-trauma platoons, and the recently fielded Forward Resuscitative Surgical System (FRSS).⁹

The FRSS draws its table of equipment (T/E) directly from the surgical company, but is a smaller, 100-percent mobile "plug and play" unit that can be used in RFM joint operations. It has one to two surgeons, and between 7 to 10 ancillary support personnel, depending upon the requirement. It can provide surgical care to 18 casualties, is self-sustaining for 48 hours, has oxygen-generating capability, and contains its own BOS. The FRSS weighs two tons, is transported on two pallets, and has two shelters and three generators. It has two pre-operative beds, one OR table, two post-operative beds, one ultrasound, and basic laboratory capability. The FRSS requires a 40 to 60 minute set up and strike time.¹⁰

The Navy is capable of supporting smaller tactical missions with surgical crisis response teams (CRT). CRTs originate from CONUS and OCONUS military treatment

facilities (MTF). Their size and capability can be tailored to meet a variety of response requirements, but they typically have a structure and staff mix similar to an Army FST. The current CRT mission in OCONUS facilities is to serve, along with Army and Air Force teams, as an on-call medical crisis response capability for the COCOM.

Navy supports the MEF with ten, 500-bed, containerized fleet hospitals (FH). FHs are prepositioned around the world, either in caves, warehouses, or onboard maritime prepositioning ships (MPS). When deployed, FHs are manned by augmented active duty and reserve personnel. Within the last few years, FHs have gradually been modified to be modular and more flexible in supporting combat operations and military operations other than war (MOOTW). Today's FH contains the breakaway Expeditionary Medical Facility (EMF), a 116-bed component of the larger 500-bed facility. Where the FH requires 27 acres of flat land for assembly, the EMF requires less than three acres. Once assembled, however, neither FH nor EMF is designed for rapid repositioning or redeployment. The next generation FH/EMF is designed to be more modular and mobile, but is still in the concept development phase and will not be available for several years. Their conceptual Expeditionary Surgical Unit (ESU), another next-generation capability, will have the smallest logistics footprint of an EMF. ESU will contain one OR, five intensive care unit (ICU) beds, five acute care beds and ancillary services.¹¹

Navy also provides two hospital ships: USNS MERCY (T-AH 19), homeported in San Diego; and USNS COMFORT (T-AH 20), homeported in Baltimore. These ships are identical, converted oil tankers that contain 1,000 hospital beds apiece. They are the largest trauma care facilities in the world, have very impressive capabilities, and are considered national assets. When deployed, the ships are piloted and maintained by civilian mariners

and contain a crew of 1,200 medical, dental, and ancillary care personnel augmented from CONUS Navy MTFs. The hospital ships have been employed in a variety of combat support and MOOTW missions since their conversion in the early 1980s, and may be tailored to support a 250, 500, and 750-bed capability, depending on the requirement. It is worth noting that the cost involved in manning and deploying each vessel in a fully operational status, roughly one million dollars or more per week, limits their use to very infrequent missions. This cost is billed to the COCOM requesting this asset.

Navy vessels smaller than LHA/LHD-class amphibious warships do not have imbedded surgical capability, though recently the Sixth Fleet flagship, USS LASALLE (AGF-3), successfully deployed surgical CRTs onboard to support Mediterranean maritime interdiction operations (MIO). Marine Expeditionary Units (MEU) also do not have surgical capability when separated from the LHA/LHD during split Amphibious Ready Group (split-ARG) operations. This places ship's company and Marines at increased risk since these smaller ships and MEU "slices" frequently operate several hundred miles or more from the closest LHA/LHD, and in remote areas where access to surgical care is primitive, minimal, or non-existent.

Joint Collaboration

Service medical departments have made significant inroads in comparing existing forward surgical systems. They are now exploring opportunities to eliminate waste and redundancy through standardization, recognizing each Service has unique standards and requirements based on their individual missions. An example of this effort is the Joint Readiness Clinical Advisory Board (JRCAB). The JRCAB's mission is to:

- standardize medical materiel for use by all military services, examining war readiness and peacetime operations requirements;
- achieve maximum standardization of deployable medical systems within the military services, consistent with each Service's mission;
- provide clinical, technical, and logistical expertise to ensure quality medical materiel is available to the Services.¹²

A subcomponent of the JRCAB is the Joint Services Deployable Medical Systems Coordinating Group (JSDMSCG). The JSDMSCG consists of medical logistics, acquisition and program managers from each Service. This group examines all new large-expenditure medical products from a joint perspective and makes recommendations to the JRCAB on research/development, product streamlining, and acquisition.¹³

One example of system integration pertains to the type of shelters used in mobile surgical units and efforts to standardize a product that will meet the needs of all Services. Shelter standardization causes the facility to be designed for a variety of transportation options, enables personnel to train and work in a common shelter, facilitates procurement of interchangeable systems for use within that shelter, and increases opportunities for joint interoperability important to the COCOM.

Joint review and standardization of forward surgical systems is also necessary to ensure all medical departments align and conform these systems into broader logistical support requirements and parameters. Lift, sustainability, communications, mobility, and access are each major consideration areas when designing and procuring systems as part of the total force logistics capability. A forward surgical unit must be able to:

- utilize a variety of lift opportunities for rapid insertion;

- communicate with combat units and evacuation assets for expedient and seamless patient care;
- move quickly in the RFM environment;
- offer rapid accessibility to wounded or injured troops.

Counterarguments

In the world of forward surgical teams, one size does not fit all and integration is far from seamless, even in those environments where common systems and seamless integration should now exist. After all, each Service has been providing forward surgical care since their inception. The argument that limited resources are just recently driving consolidation efforts has merit, but Services have throughout history operated more frequently within the constraints of austere budgets than carte blanche procurement capability. It is the RFM logistical support requirement that is driving this accelerated effort toward standardization and joint interoperability.

Each forward surgical unit in each Service has significant capabilities and limitations. The trade-off for speed and mobility is limited self-sustainment and an increased reliance on external logistical support. "Hardening" for protection against weapons of mass destruction (WMD), particularly chemical-biological-radiological (CBR) agents, dramatically increases weight and cube requirements and decreases mobility. The limited footprint, RFM requirement places restrictions not only on weight and cube, but on personnel numbers, as well. These and other challenges are providing a revolution in military affairs (RMA) within Service medical departments. The necessity to provide solutions is real and there is increasingly less tolerance to "kick the can down the road" in developing more advanced capability.

Some in the medical community might argue that limiting factors in the operational environment should cause planners and operators to avoid conflicts where adequate surgical care cannot be provided; that they should focus instead on engaging in warfare or MOOTW only when the logistics piece, including the medical/surgical element, is capable of sustaining the forces involved. This argument, however, disregards the responsibility of Service medical departments to support deployed forces no matter where they may be tasked to respond.

Regarding specific advantages and disadvantages of forward surgical units, Army FSTs are certainly as capable as Air Force ATHs, but do not yet have the lighter mobility of the Air Force MFST. Army might argue helicopter MEDEVAC capability enables them to quickly transport the wounded to the FST, rendering the need for a lighter-footprint surgical capability negligible. But recent missions in OEF requiring forces to penetrate deep into inhospitable and very rugged terrain would indicate efforts to develop a forward surgical capability lighter than the FST is perhaps increasingly desirable.

Since Operation Desert Shield/Desert Storm the Air Force has heeded the call to revamp its mobile surgical capability, and they have done so in a big way. While other Services might argue the Air Force's primary medical mission should focus on patient transportation and "care in the air," Air Force has been perhaps the most proactive of all the Services in developing CHS for RFM. Air Force also has possibly the most flexible forward surgical asset for joint interoperability and they continue to improve on this impressive capability.

Navy Medicine is responsible for providing trained medical, dental, and surgical personnel to the Marine Corps. Adequately augmenting Marine Corps medical battalions

with required surgical personnel from CONUS MTFs is a significant challenge. Tricare priorities, limited field training of MTF personnel, and a diverse medical augmentation program (MAP) are elements affecting Navy and Marine Corps medical readiness.¹⁴

It is useful for the COCOM to be aware of factors influencing Navy Medicine's ability to provide forward surgical assets on demand, and why limitations are inherent to its deployable medical systems (DEPMEDS). Through their *Total Health Care Support Readiness Requirement* (THCSRR) resource allocation model, Navy Medicine justifies its active duty and reserve personnel endstrength by aligning billet requirements to hospital ships, FHs, and CRTs. Active duty personnel are employed full time in CONUS MTFs and report to their assigned operational platform or unit when deployed. Reserve personnel typically augment MTFs when active duty personnel deploy, but many reservists also have DEPMED billets to fill during operational missions, primarily in FHs. The pressure on Navy Medicine to support an uninterrupted Tricare mission within a resource-constrained environment, however, causes most MTF personnel to spend just one or two weeks per year training with their operational units. Certainly, Navy Medicine strives to reach a practical balance between supporting both peacetime and operational missions, but the COCOM must be informed that this significant readiness issue can adversely affect Navy medical support for crisis response missions. Navy Medicine can legitimately argue that peacetime health care demands far exceed their ability to perform both Tricare and operational missions to everyone's satisfaction. This has been a problem voiced by all Services to Congress. Army and Air Force grapple with this issue as well. Navy Medicine's primary mission and reason for being, however, is to support the operational forces. Navy Medicine effectively supports

the occasional requirement to man hospital ships and FHs, but their MTF personnel are challenged to train for, and effectively support, Marine Corps units and Navy surgical CRTs.

In summary, the goal in providing forward surgical care in RFM is to maximize effectiveness and ensure unity of effort. Service medical departments are making major adjustments in investment, doctrine, and training to achieve this goal. Some have done better than others. No longer does the U.S. military operate in an environment where big hospital ships or field hospitals serve the purpose they once did over a decade ago. Though these assets remain an integral part of the CHS requirement, the focus must now be on more aggressively developing forward surgical capabilities that can closely and readily support highly mobile forces.

Recommendations

Joint Integration

There is no argument that Service medical departments must retain independent focus and control over their own surgical assets due to the unique nature of each Service and their individual support requirements. Some experts, however, advocate combining all Service medical departments into a joint functional command or "Joint Health Service" in an effort to eliminate significant redundancies and to improve integration of both Tricare and operational support missions. There is certainly some merit to this concept and, at the risk of creating yet another level of bureaucracy, the idea has a strong following. Currently, however, CHS in each Service is doctrinally designed to support the requirements of that specific Service and resources are aligned accordingly. Adequate CHS and interservice integration ultimately affect surgical response effectiveness and versatility in all joint operations. Service medical

departments must view joint interoperability as a primary objective in modernizing CHS assets.

The first principle in joint force organization is that CJTFs organize forces to accomplish the mission based on their vision and concept of operations. Command emphasis on interoperability is essential to enhance joint warfighting capabilities.¹⁵

While individual Service CHS is usually effective in a single-service operation, a lack of interservice integration risks degrading necessary flexibility and support in joint operations. Operational planners can promote improvement by examining the subtleties, obstacles, and friction surrounding this problem. By submitting critical analysis of recognized CHS discrepancies in lessons learned and to their Service chiefs, planners can significantly influence a reduction in the obstacles that prevent opportunities for effective integration.

The next step is to develop policies specifically addressing forward resuscitative surgery (FRS). Areas requiring further review and validation include FRS standards for organization and employment, trauma team training, and support requirements. FRS, including multi-staged surgery, will ensure the provision of emergency surgery and essential care for deployed forces in a resource- and lift-constrained environment. We must work with the Office of the Secretary of Defense to expeditiously complete a comprehensive FRS policy.¹⁶

All surgical systems are eventually destined for use in the joint arena, so Services must maintain a critical eye toward combined interoperability. In the RFM environment it will not be unusual for an Army FST to support a remote Marine Corps unit or for an Air Force MFST to support special operations forces (SOF). All Services have been tasked to send small surgical teams into disaster torn regions to render assistance.

Time and space requirements, resource and logistics constraints, and preparation for unconventional, fast moving maneuver warfare or MOOTW no longer permit individual

Services to apply a conventional, myopic view when designing field surgical platforms or specialty teams. The "not our mission" or "protect the rice bowl" mindset must be replaced by "can do, must do" at the corporate level. Acquisition and program managers, resource sponsors, and doctrine and training centers must critically examine existing and potential CHS systems with an eye toward increased capacity for joint integration.

Modernization

The U.S. depends on mobility and flexibility to gain tactical advantage in military operations. Consequently, all means of logistical support, including CHS, must be versatile enough to achieve combat or MOOTW objectives in a limited access environment. Large, heavy-lift, immobile field hospitals are of negligible value in RFM environments where forces are dispersed over wide and diverse geographic terrain with small footprint requirements or constrained evacuation capabilities.

Service medical departments must continue to apply evolving technology, develop innovative thought and seek expert input to improve surgical mobility. This cannot happen in a vacuum. Medical department leaders must consult with medical and logistics personnel who have considerable experience with the operating forces and who truly understand RFM concepts, operations, and planning. These are people who have served in the field with combat troops, on warships and on component or joint operations staffs, and whose careers have progressed in that operational environment.

At sea, carrier battle groups (CVBG) and amphibious ready groups (ARG) are frequently divided or "split" to conduct simultaneous operations on multiple tactical fronts. The traditional reliance on the carrier or large-deck amphibious warship medical department for surgical support is, through operational necessity, more frequently being altered to place

increased reliance on smaller ships for surgical capability. The present challenge here is to tailor surgical support within the confines of very small spaces and on ships with limited evacuation capabilities. This is achievable without degrading CRTS surgical capability by occasionally augmenting smaller ships with surgical personnel from Navy MTF CRTs. This can also be accomplished by creating separate surgical CRTs within Amphibious Group (PHIBGRU) staffs that, like fleet surgical teams that augment LHA/LHDs when deployed, can be on stand-by for activation when necessary.

Logistics Considerations

CHS materiel competes with combat munitions and equipment for constrained airlift or sealift availability in wartime. From a pure combat logistics perspective, CHS packages are secondary to higher priority "first in" lift requirements, particularly when the CHS T/E is not consistent or is not part of the deploying unit's cargo manifest matrix. Medical logistics personnel must work closely with embark and combat cargo officers to ensure CHS T/E is on the cargo manifest (e.g., the Computer Aided Embarkation Manifest System (CAEMS) used by the Marine Corps). This requires considerable advance planning and a comprehension by medical logisticians of operational lift capabilities and limitations. This information must be relayed to those who design forward surgical support packages so there is a clear understanding of what lift allowances exist on specific platforms.

Awareness and Improvement

Understanding the limitations in current CHS integration can stimulate better solutions for amending deficiencies and improving that support. Major contributions to forward surgical care will only be realized through developing and implementing:

- joint capabilities review;

- joint doctrine agreeable to all Services;
- standardized equipment and procedures;
- mutually acceptable training to facilitate joint integration.

Medical planners can accomplish this by participating in joint wargames, exercises, and operations, then reporting their findings to their respective Service medical departments.

Conversely, medical department leaders must listen to their experienced planners and align resources to support necessary innovation in developing more capable forward surgical assets.

Training and Effectiveness

Surgical personnel must aggressively train with their assigned deployable unit. With the current operational tempo, it is no longer permissible for MTF surgical personnel to receive only notional training or to be completely excluded from field or shipboard training. Training one or two weeks a year is not sufficient. The time to learn is not after the team arrives on the battlefield or aboard ship. Effectiveness can only be achieved by practicing in the field or shipboard environment with those individuals who will serve together on that particular team. From an operational perspective, Service medical departments must evolve beyond the "Tricare first" mindset and shift the primary focus toward supporting deployed forces.

Conclusion

The institutional complexity of establishing, employing, and maintaining mobile surgical capability is a daunting challenge. While there are many skilled and dedicated people working to address this issue, there are nonetheless clear and present obstacles to providing adequate surgical care to forward-deployed forces. With some assertive

modifications and resource reallocation, there is the ability today to dramatically improve integrated mobile surgical care afloat and ashore. COCOMs, via their specific recommendations on annual priority lists to service resource sponsors, are significantly influential in rapidly enhancing this desired level of support.

Space, time, troop dispersion, ground and air transportation assets, the location of medical facilities, and the dynamic tactical situation all influence how readily forces can access surgical care. This presents new challenges in how to effectively provide that care. Some Services are more proactive than others are. Doctrine and resources are gradually shifting to support this requirement and to influence desired modernization. Agencies involved in developing CHS assets are more effectively communicating with operators who rely on those assets, but increased emphasis here is necessary.

The goal in providing forward surgical care in joint RFM is to maximize effectiveness and ensure unity of effort. Services must work together more readily to achieve this goal. Air Force MFSTs, Army FSTs, Marine Corps FRSSs, and Navy CRTs are capable of joint interoperability, the art of using one Service's assets to directly support other Services. Greater effort, however, is required here with an eye toward enhanced flexibility.

Surgical personnel must experience realistic training to be effective in combat or MOOTW settings. Participating only one or two weeks per year in this training is insufficient. The primary focus for active duty and reserve medical personnel must always be to train in the environment that will best prepare them to support the operational mission.

NOTES

¹ Joint Chiefs of Staff, Focused Logistics Campaign Plan, (Washington, DC: 2002), 16.

² Headquarters, Department of the Army, Employment of Forward Surgical Teams - Tactics, Techniques, and Procedures, FM 8-10-25, (Washington DC: 30 September 1997), 1-1.

³ Ibid.

⁴ Ibid., pp. 1-5, 1-6.

⁵ National Defense University, Institute for National Strategic Studies, Strategic Assessment 1999-Priorities for a Turbulent World, (Washington, DC: Spring 1999), 269.

⁶ FM 8-10-25, 1-1.

⁷ Ibid., pp. 1-5, 2-1, 2-2.

⁸ Paul K. Carlton, Jr., "New Millennium, New Mind-Set: The Air Force Medical Service in the Air Expeditionary Era," Aerospace Power Journal, 4 (Winter 2001): 10.

⁹ Greg M. Huet, "Future Warfare - Leading the Way to the Future," Brief, 1st Medical Battalion, U.S. Marine Corps, Camp Pendleton, CA: 14 August 2002.

¹⁰ Greg M. Huet, Commanding Officer, 1st Medical Battalion, U.S. Marine Corps, Telephone conversation, 21 January 2003.

¹¹ "Proposed (4/2) Fleet Hospital Design," Brief, U.S. Navy Fleet Hospital Support Office, Fort Detrick, MD: 23 April 2002.

¹² "JRCAB Mission," Joint Readiness Clinical Advisory Board, <<http://www.jrcab.army.mil>>

¹³ "Groups," Joint Services Deployable Medical Systems Coordinating Group, <<http://www.jrcab.army.mil>>

¹⁴ Greg M. Huet, "A Winning Concept for the Marine Corps and the Navy," Marine Corps Gazette, 1 (January 2002): 50.

¹⁵ Joint Chiefs of Staff, Joint Task Force Planning Guidance and Procedures, Joint Pub 5-00.2 (Washington, DC: 13 January 1999), II-1, 2.

¹⁶ Joint Chiefs of Staff, Focused Logistics Campaign Plan, (Washington, DC: 2002), 64.

BIBLIOGRAPHY

Carlton, Paul K. Jr. "New Millennium, New Mind-Set: The Air Force Medical Service in the Air Expeditionary Era," Aerospace Power Journal, 4 (Winter 2001): 8-13.

"Groups." Joint Services Deployable Medical Systems Coordinating Group.
<<http://www.jrcab.army.mil>>

Headquarters, Department of the Army. Employment of Forward Surgical Teams - Tactics, Techniques, and Procedures. FM 8-10-25. Washington, DC: 30 September 1997.

Huet, Greg M. "A Winning Concept for the Marine Corps and the Navy." Marine Corps Gazette, 1 (January 2002): 50-51.

Huet, Greg M. Commanding Officer, 1st Medical Battalion, United States Marine Corps. Telephone conversation, 21 January 2003.

Huet, Greg M. "Future Warfare - Leading the Way to the Future." Brief. 1st Medical Battalion, U.S. Marine Corps, Camp Pendleton, CA: 14 August 2002.

"JRCAB Mission." Joint Requirements Clinical Advisory Board.
<<http://www.jrcab.army.mil>>

National Defense University, Institute for National Strategic Studies. Strategic Assessment 1999-Priorities for a Turbulent World. Washington, DC: Spring 1999.

"Proposed (4/2) Fleet Hospital Design." Brief. U.S. Navy Fleet Hospital Support Office, Fort Detrick, MD: 23 April 2002.

U.S. Joint Chiefs of Staff. Focused Logistics Campaign Plan. Washington, DC: 2002.

U.S. Joint Chiefs of Staff. Joint Task Force Planning Guidance and Procedures. Joint Pub 5-00.2. Washington, DC: 13 January 1999.

ACRONYMS

AO	Area of Operations
ARG	Amphibious Readiness Group (Navy/Marine Corps)
ATH	Air Transportable Hospital (Air Force)
BOS	Base Operating Support
CAEMS	Computer Aided Embarkation Manifest System (Marine Corps)
CBR	Chemical-Biological-Radiological
CHS	Combat Health Support
CJTF	Commander Joint Task Force
COCOM	Combatant Commander
CONUS	Continental United States
CRT	Crisis Response Team (Navy)
CRTS	Casualty Receiving and Treatment Ship (Navy)
CSH	Combat Support Hospital (Army)
CVBG	Carrier Battle Group (Navy)
CV/CVN	Aircraft Carrier (Navy)
CZ	Communications Zone
DEPMEDS	Deployable Medical Systems
DoD	Department of Defense
DPG	Defense Planning Guidance
EMEDS	Expeditionary Medical Systems (Air Force)
EMF	Expeditionary Medical Facility (Navy)
ESU	Expeditionary Surgical Unit (Navy)
FH	Fleet Hospital (Navy field hospital)
FRS	Forward Resuscitative Surgery
FRSS	Forward Resuscitative Surgical Systems (Marine Corps)
FSSG	Force Service Support Group (Marine Corps)
FST	Forward Surgical Team (Army)
GP	General Purpose (refers to Army tents)
HSS	Health Service Support
ICU	Intensive Care Unit

JRCAB	Joint Readiness Advisory Group
JSDMSCG	Joint Services Deployable Medical Systems Coordinating Group
LHA/LHD	Landing, Helicopter Assault / Landing, Helicopter Dock (Navy Large-Deck Amphibious Assault Warships)
MAGTF	Marine Air-Ground Task Force (Marine Corps)
MASH	Mobile Army Surgical Hospital
MEDEVAC	Medical Evacuation
MEF	Marine Expeditionary Force (Marine Corps)
MEU	Marine Expeditionary Unit (Marine Corps)
MFST	Mobile Field Surgical Team (Air Force)
MIO	Maritime Interdiction Operations
MOOTW	Military Operations Other Than War
MTW	Major Theater War
OCONUS	Outside Continental United States
OEF	Operation Enduring Freedom
THCSRR	Total Health Care Support Readiness Requirement (Navy)
OR	Operating Room
RFM	Rapid Force Maneuver
RMA	Revolution in Military Affairs
SPEAR	Small Portable Expeditionary Aeromedical Rapid Response (Air Force)
T-AH	Tanker, Auxiliary Hospital (Navy hospital ship)
T/E	Table of Equipment
WMD	Weapons of Mass Destruction (Refers to CBR/nuclear weapons.)